First record of the Lessepsian migrant *Lagocephalus spadiceus* (Tetraodontidae) in the Sea of Marmara

by

Sezginer TUNCER (1), Herdem ASLAN CIHANGIR (1) & Murat BILECENOGLU (2)

RÉSUMÉ. - Premier signalement du migrateur lessepsien *Lagocephalus spadiceus* (Tetraodontidae) en mer de Marmara.

La présence du migrateur Lessepsien *Lagocephalus spadiceus* (Richarson, 1845) est rapportée pour la première fois en mer de Marmara, dans laquelle aucun poisson d'origine Indo-Pacifique n'avait jamais été signalé auparavant. Cette découverte augmente significativement la distribution de cette espèce en mer Méditerranée.

Key words. - Tetraodontidae - *Lagocephalus spadiceus* - MED - Sea of Marmara - Lessepsian migration - New record.

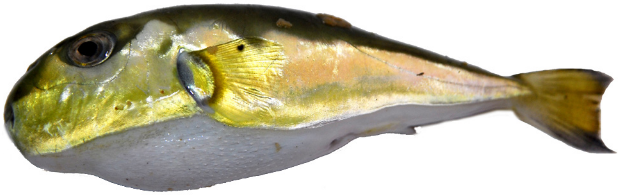

Figure 1. - *Lagocephalus spadiceus*, 111 mm SL, from Sea of Marmara (PRM-PIS 2007-0062).

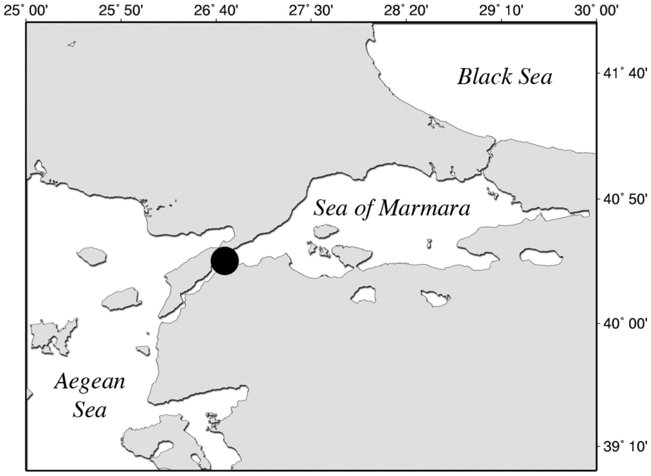

Figure 2. - Capture locality of *Lagocephalus spadiceus* (indicated by a full dot). *[Lieu de capture de* L. spadiceus.*]*

The Indo-Pacific originated *Lagocephalus spadiceus* (Richardson, 1845) is one of the most abundant non-indigenous pufferfishes of the eastern Mediterranean Sea, distributing along the entire Levantine basin coasts from Port Said to southern Aegean Sea (Golani *et al*., 2002). Habitat of the species is mainly benthic, including sandy and muddy substrates of shallow coasts with depths less than 50 m. Largest specimen captured from the Levant coast was 24.5 cm standard length (Ben-Tuvia, 1966), however, a maximum size of 40 cm was mentioned (Golani *et al*., 2002). The species has long been used as food in many localities of the Indo-Pacific, such as Japan, Thailand, Malaysia etc. (Brillantes *et al*., 2003), but it does not have any commercial value in the Mediterranean and frequently discarded from the bottom trawl catch.

On 23 September 2007, a 126 mm TL (111 mm SL) specimen of *L. spadiceus* (Fig. 1) was captured by a fishing line from the Gelibolu coast of Sea of Marmara (26°41'N, 40°25'E) (Fig. 2). This finding represents the northernmost occurrence of the species in the Mediterranean Sea and the first Lessepsian migrant fish record in the Sea of Marmara. The specimen was fixed in 6% formalin and kept in the Hydrobiology Museum of Faculty of Fisheries, Onsekiz Mart University (PRM-PIS 2007-0062). Description of the single specimen is as follows: Dorsal finrays 12, anal finrays 12, pectoral finrays 17. Body elongate and inflatable. Dorsal and anal fins are short based, both located posteriorly. No pelvic fins. Mouth small and terminal; two large teeth in each jaws, with median suture. Two lateral lines, curving around eyes. Head 3.1, predorsal length 1.5, preanal 1.7, all in SL. Eye diameter 3.3, snout length 1.9, postorbital length 3.1, all in head length. No scales on the body, but small spinules on nape, interorbital (not extending beyond pectoral fin) and on belly. Body dark green on the dorsum, silvery yellow on the sides and whitish below. Colour and measurements of the specimen are well in accordance with descriptions of Ben-Tuvia (1953) and Golani *et al*. (2002).

The genus *Lagocephalus* includes four species inhabiting the Mediterranean. Only *L. lagocephalus* (Linnaeus, 1758) is of Atlanto-Mediterranean origin, while the rest three species [*L. spadiceus* (Richardson, 1845), *L. suezensis* Clark & Gohar, 1953 and *L. sceleratus* (Gmelin, 1788)] are Lessepsian migrants, which have penetrated to the Levantine basin by way of Suez Canal. *Lagocephalus spadiceus* can be distinguished from all its Mediterranean congeners by the following characters: Spinules on the belly and back (no head spinules in *L. lagocephalus*); spinule patch on the head not extending beyond the pectoral fin margin and body without dots (spinules on the dorsum extend beyond dorsal fin and body with distinct dark dots in *L. suezensis* and *L. sceleratus*).

Lagocephalus spadiceus has a wide Indo-Pacific distribution extending from the Red Sea, east Africa and Somalia to Japan and northern Australia (Golani *et al*., 2002). In the Mediterranean Sea, it was first recorded from Iskenderun Bay (Turkey) by Kosswig (1950), which was later found off the northwest of Samos Island (Ananiadis, 1952) and Israel (Ben-Tuvia, 1953). It is striking to note that, the distribution range of *L. spadiceus* remained unchanged

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(1) Onsekiz Mart Universitesi, Su Urunleri Fakultesi, Su Urunleri Temel Bilimler Bolumu 17100 Çanakkale, TURKEY.
(2) Adnan Menderes Universitesi, Fen-Edebiyat Fakultesi Biyoloji Bolumu 09010 Aydin, TURKEY. [mbilecenoglu@yahoo.com]

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until now, although more than five decades have passed since its introduction to the Mediterranean Sea. According to Por (1978), low salinity and cold water character of the northern Aegean Sea (principally due to Pontic water coming from the Çanakkale strait) is an important ecological barrier for the establishment of thermophile fauna, which may explain the paucity of Lessepsian fish migrants in the northern basin of Aegean Sea. However, there are no conclusive explanations on why *L. spadiceus* did not continue westwards colonization, where no distinct physical barriers preventing further dispersal exist (Golani, 1998).

The Sea of Marmara is a transition zone between the Black Sea and the Mediterranean, where a total of 48 alien species (23 phytoplankton, 23 invertebrates and two fish) were recorded, 13 of which have questionable occurrence (Çinar *et al.*, 2005). Among the two fishes, the tropical Atlantic originated *Solea senegalensis* Kaup, 1858 is known by a single unsubstantiated record and *Liza haematocheilus* is an anthropogenic introduction to the Black Sea that expanded its range to the Marmara waters. There are several cases of Atlanto-Mediterranean originated fish penetrating to the Black Sea via Sea of Marmara against a gradient of salinity and temperature (Kosswig, 1974), but no cases of zoogeographical range expansion of Lessepsian fishes were documented until now. Some recent findings of *L.spadiceus* as a partial resident species in estuaries (Vidthayanon and Premcharoen, 2002), is an evidence for its high modificability to variable ecological conditions. Despite the fact that Sea of Marmara is one of the busiest transportation routes in the Mediterranean, shipping is unlikely to be a vector of introduction for the species.

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